



Colorado State Forest Service  
Insect Information Series  
MPB #2

## PREVENTIVE SPRAYING FOR MOUNTAIN PINE BEETLE

The mountain pine beetle (MPB) is an insect capable of attacking and killing ponderosa, lodgepole, and limber pines in Colorado. Periodic epidemics are capable of causing heavy mortality in older, dense forests. Many situations exist where high-value pines require protection from uncontrolled beetle pressures nearby. **Preventive spraying provides a proven method of keeping uninfested but susceptible pines alive, despite attempted attack.** As such, it is relatively safe and affordable “term insurance” that protects key trees until the nearby beetle threat subsides.

**CANDIDATE TREES** - In the great majority of cases, trees selected are big, valuable ponderosa or lodgepole pines. Of course, trees selected should be a species normally attacked by MPB. If MPB is the insect of concern, then spruce, fir, juniper, and Douglas-fir trees do not need to be treated. (Note, these species are attacked by other bark beetles and may warrant preventive spraying when their respective threats are present). Preventive spraying involves the application of pesticides and is usually performed by commercial sprayers. Because of the associated environmental considerations and expense, it is neither practical nor advisable to spray every tree on a tract of land. Rather, preventive spraying is intended for important, “must-save” trees. **Since MPB rarely attacks trees under 8 inches in diameter, smaller trees do not require spraying unless there is a local threat from ips and twig beetles.** (If you have questions about these smaller bark beetles, call a representative of the agencies listed at the bottom of this sheet). MPB attacks stressed trees more often than healthy ones. Stress factors include mistletoe, root cutting, bark wounding, soil compaction, exposure to fire, drainage changes, adverse weather (such as drought), and infestation by other insects. A tree’s value is subjective, but typically comes from its size, pleasing shape, and proximity to a home. **Home builders should remember that trees carefully saved during construction were probably stressed, and as such, are attractive to beetles. Other highly vulnerable trees are those with infested firewood stacked against them, those pruned in early summer for mistletoe reduction, and those near infested trees from which MPB will fly.**

**WHEN TO SPRAY** - Based on the tested residual of materials registered for preventive bark beetle spraying, treatment needs to be done **between May 1 and July 15 on an annual basis during years when the risk of beetles is high.** Infestations usually last 5-7 years in a local area and beetles usually fly about a mile or less (rarely up to five miles).

**CHEMICALS LABELED FOR PREVENTIVE SPRAYING** - Over the past 20 years, the standard for MPB preventive spraying has been **carbaryl (trade name Sevin)**. This carbamate has long been used for the control of leaf-chewing insects in both forest and garden situations. Carbaryl comes in many formulations. The liquid concentrates designed for use on large trees require dilution with water prior to application. Never dilute with petroleum liquids such as diesel fuel. Carbaryl is most effective when the pH of water used for dilution is 6 (slightly more acidic than neutral). When using water of pH 7 to 8, it may be advisable to add household vinegar to the spray mixture to achieve a pH of 6. (A pint of vinegar is enough to lower the pH of 25 gallons of spray about 1 point.) **ALWAYS READ THE LABEL FOR COMPLETE MIXING INSTRUCTIONS AND SAFETY PRECAUTIONS.**

Since about 1995, a second material called **permethrin (trade names Astro, Dragnet, and others)** has been used locally for MPB prevention. This synthetic pyrethrin performed very well as a preventive bark beetle spray in research tests in California, Montana, and the South. It appears to have stood up well as a MPB preventive in our area, as well.

**APPLICATION GUIDELINES** - Application of preventive sprays can be a do-it-yourself activity but is usually done by commercial contractors, who must meet rigorous training, experience, licensing, and insurance requirements. If contractors are used, it is proper to ask for credentials.

**Preventive spray is applied to the trunk from the ground up to a height of 30 feet OR where the trunk narrows to 6 inches, whichever comes first.** For example, if a tree trunk narrows to 6 inches at a height of 22 feet, only the lower 22 feet of trunk need spraying. In contrast, if another tree narrows to 6 inches at a height of 54 feet, only the lower 30 feet of trunk needs spraying. Spraying should wet the bark, but only to the point of run-off. **To adequately spray a typical, large pine takes about 2-4 gallons of spray mixture. The entire circumference must be treated. Pine foliage and branches under 6" in diameter do not need to be sprayed.**

Spraying should be done with an eye on the weather. Avoid excessively windy or freezing days. **At least two hours of rain-free weather should follow the application to allow proper drying.**

Use formulations that are labeled for bark beetle prevention and specifically designed for use on trees. Usually these contain additives called “stickers” which allow better adherence to bark.

It is a good idea to identify or “mark” trees which have been sprayed. Placing a spot of spray paint at the base of treated trees is one method.

An occasional problem which occurs in carbaryl-sprayed trees is spider mite build-up. Spider mites are tiny spider relatives that discolor needles in the process of feeding. A rule of thumb is to add miticide every third year of consecutive bark beetle preventive spraying.

**FOLLOW ALL SAFETY GUIDELINES ON THE LABEL.** While these materials are safe when used properly, practice common sense with regard to the presence of wildlife, livestock, pets, and children during the application and drying period.

**Most preventive spraying failures are due to: 1) improper treatment height, 2) entire circumference not treated, 3) applied too early or too late, 4) wrong material, 5) right material mixed improperly.**

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**For additional information about Mountain Pine Beetle contact your nearest office of the Colorado State Forest Service, Cooperative Extension Service, or United States Forest Service.**